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### CLAIMS

1. A method in a mobile telecommunication system using lobes for establishing a radio channel between a mobile station (MS) and a base station (BS), characterized by the steps of:

- 5 connecting the transmitter of the base station to a wide lobe in a sector;  
connecting the receiver of the base station to narrow lobes in the sector through a fast scanning switch;

- measuring the signal strength (RSS) received from the mobile station or signal quality in each lobe in the sector during the increase of the power in the  
10 mobile station in the beginning of the frame;

selecting the lobe with highest received signal strength (RSS) or signal quality;

connecting the receiver equipment of the base station (BS) to the selected narrow lobe before frame data starts to be transmitted; and

- 15 connecting the transmitter equipment of the base station (BS) from a wide to narrow lobe at a suitable point in the signalling scheme.

2. A method as claimed in claim 1, characterized in that the base station (BS) measures the received signal strength (RSS) or signal quality of the lobes in the sector simultaneously or sequentially.

- 20 3. A method as claimed in claims 1 or 2, characterized in that a direction finding unit (DFU) in the base station (BS) measures the received signal strength (RSS) or signal quality in each lobe in the sector, and stores the values of the received signal strength or signal quality for each lobe in a memory (RSSI-records).

4. A method as claimed in claim 3, characterized in that a base site  
25 controller (BSC) reads the values in the memory (RSSI-records) and decides which lobe has the highest received signal strength or signal quality selecting that lobe direction for communication with the mobile station.

5. A method as claimed in claim 4, characterized in that the base site controller (BSC) configures a lobe shaping unit (LSU) to establish a preferable lobe,  
30 e.g. narrower lobe, in the direction of the selected lobe towards the mobile station for the downlink and/or uplink respectively.

6. A method as claimed in anyone of the preceding claims, characterized in that it is used at call set up and/or at handover between sectors.

7. A method as claimed in anyone of the preceding claims, characterized in  
35 that lobes having different widths and gains in arbitrary directions both in the uplink and the downlink are formed by changing phase and amplitude coefficients.

8. A method as claimed in claim 7, characterized in that the base station (BS) transmits identification signals in a wide lobe to inform the mobile station (MS), which is covered by said wide lobe, about its existence.

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9. A method in a mobile telecommunication system using lobes for measuring the signal quality of a radio channel between a mobile station (MS) and a base station (BS), characterized by the steps of:

connecting the receiver of the base station to narrow lobes in the sector  
5 through a fast scanning switch;

measuring the signal strength (RSS) received from the mobile station or signal quality in each narrow lobe in the sector;

selecting the lobe with highest received signal strength (RSS) or signal quality;

10 connecting a signal quality receiver unit (SR) to the selected narrow lobe.

10. A method as claimed in claim 9, characterized in that the signal quality receiver unit (SR) performs signal strength measurements or  $\Phi$  tone measurements in this selected lobe for handover purposes.

11. A method as claimed in claim 10, characterized in that the base station  
15 (BS) monitors the received signal and continuously connects the best lobe to the signal quality receiver unit (SR).

12. A method as claimed in claim 9, 10 or 11, characterized in that the base station (BS) measures the received signal strength (RSS) or signal quality of narrow lobes in the sector simultaneously or sequentially.

20 13. A method as claimed in any one of claims 9 - 12, characterized in that a direction finding unit (DFU) in the base station (BS) measures the received signal strength (RSS) or signal quality in each lobe in the sector, and stores the values of the received signal strength or signal quality for each lobe in a memory (RSSI-records).

25 14. A method as claimed in claim 13, characterized in that a base site controller (BSC) reads the values in the memory (RSSI-records) and decides which lobe has the highest received signal strength or signal quality selecting that lobe direction for communication with the mobile station.

15. A method as claimed in claim 14, characterized in that the base site  
30 controller (BSC) configures a lobe shaping unit (LSU) to establish a preferable lobe, e.g. narrower lobe, in the direction of the selected lobe towards the mobile station for the downlink and/or uplink respectively.

16. A method as claimed in any one of claims 9 - 15, characterized in that  
35 the downlink are formed by changing phase and amplitude coefficients.

17. An arrangement in a mobile telecommunication system using lobes for establishing a radio channel between a mobile station (MS) and a base station (BS), characterized in that a lobe shaping unit is arranged to connect the transmitter of the base station to a wide lobe in a sector and to connect the receiver of the base

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- station to narrow lobes in the sector through a fast scanning switch, in that a direction finding unit (DFU) in the base station (BS) is arranged to measure the signal strength (RSS) received from the mobile station or signal quality in each lobe in the sector during the increase of the power in the mobile station, to select the lobe
- 5 with highest received signal strength (RSS) or signal quality, to connect the receiver part of an arbitrary TRX-equipment of the base station (BS) to the selected narrow lobe before frame data starts to be transmitted and to connect the transmitter part of an arbitrary TRX-equipment of the base station (BS) from a wide lobe to the narrow lobe using the selected narrow lobe at a suitable point in the signalling scheme.
- 10 18. An arrangement in a mobile telecommunication system using lobes for measuring the signal quality of a radio channel between a mobile station (MS) and a base station (BS), characterized in that a lobe shaping unit is arranged to connect the receiver of the base station to narrow lobes in the sector through a fast scanning switch, in that a direction finding unit (DFU) in the base station (BS) is arranged to
- 15 measure the signal strength (RSS) received from the mobile station or signal quality in each lobe in the sector, to select the lobe with highest received signal strength (RSS) or signal quality, and to connect a signal quality receiver unit (SR) to the selected narrow lobe.
19. An arrangement as claimed in claim 17 or 18, characterized in that the
- 20 direction finding unit includes a RSSI-record, RSSI-unit and said fast scanning switch.
20. An arrangement as claimed in claim 19, characterized in that the DFU reads RSSI and keeps a RSSI-record for each lobe.
21. An arrangement as claimed in claims 19 or 20, characterized in that the
- 25 base station controller (BSC) reads the RSSI-record of the direction finding unit (DFU) and continuously connects the best lobe to the receiver.